

IN THE CLAIMS

1. (Currently Amended) An isolated nucleic acid encoding a beta subunit polypeptide of a potassium channel, wherein the beta subunit polypeptide:
 - (i) forms, with at least one alpha subunit polypeptide, a Slo potassium channel; and
 - (ii) comprises an amino acid sequence that has greater than 70% identity to the S1-S2 region of ~~BK beta 2~~, BK beta 3 (amino acids 20-191 of SEQ ID NO:3), or BK beta 4 (amino acids 50-217 of SEQ ID NO:5).
2. (Currently Amended) The isolated nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide that specifically binds to polyclonal antibodies generated against a polypeptide comprising an amino acid sequence of ~~SEQ ID NO:1~~, SEQ ID NO: 3, or SEQ ID NO:5.
- 3-5. (Canceled)
6. (Currently Amended) The isolated nucleic acid of claim 1, wherein the nucleic acid encodes a polypeptide comprising an amino acid sequence of ~~SEQ ID NO:1~~, SEQ ID NO:3, or SEQ ID NO:5.
7. (Currently Amended) The isolated nucleic acid sequence of claim 1, wherein the nucleic acid comprises a nucleotide sequence of ~~SEQ ID NO:2~~, SEQ ID NO:4, or SEQ ID NO:6.
- 8.-11. (Canceled)
12. (Canceled)
13. (Currently Amended) The isolated nucleic acid of claim 1, wherein the nucleic acid selectively hybridizes under highly stringent hybridization conditions to a nucleic

acid comprising a nucleotide sequence of ~~SEQ ID NO:2~~, SEQ ID NO:4, or SEQ ID NO:6,
wherein the hybridization reaction is incubated at 42°C in a solution comprising 50%
formamide, 5x SSC, and 1% SDS, with a wash in 0.2X SSC and 0.1 % SDS at 65°C.

14.-22. (Canceled)

23. (Original) An expression vector comprising the nucleic acid of claim 1.

24. (Original) A host cell transfected with the vector of claim 23.

25.-56. (Canceled)